

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	192374	(spin adj bulb or ((read\$3 or reproduc\$3) near2 (element\$1 or device\$1)) or mr or DOMR or mre or magneto adj2 (resistiv\$3 or resistance\$1) or magnetoresist\$5 or amr or magnetic\$4 adj2 (resistiv\$3 or resistance\$1) or TuMR\$1 or CMR\$1 or GMR\$1 or spin adj2 valve\$1 or svmr\$1 or tjmr\$1 or tmj\$1 or tmr\$1 or mram\$1 or magnetic adj2 (memories or memory) or magnetic adj random adj access adj memor\$3 or DSV or TJM or macro adj magnetoresist\$5 or macromagnetoresist\$5 or piggyback or ((composite or combination or merged) adj4 head\$1)) or g11b005/39.ipc. or g11b005/33.ipc. or g11b005/127.ipc.	EPO; JPO; DERWENT	OR	OFF	2006/06/28 14:48
L2	1024628	ruthenium or Ru or ferrimagnetic\$5 or ferri adj2 magnetic\$5 or antiparallel or anti adj parallel or ((antiferromagnetic or AFM or anti adj ferromagnetic\$5) adj2 coupling\$1) or APC or AAF or SAF or synthetic\$4 adj2 (antiferromagnet\$5 or anti adj ferromagnet\$5 coupling) or artificial adj2 (anti adj ferromagnet\$5 or antiferromagnet\$5) or MSSV or SSV or AP1 or AP2 or APC1 or APC2 or AFC or ((reference or keeper) near2 layer\$1)	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:16
L3	5968	1 and 2	EPO; JPO; DERWENT	OR	OFF	2006/06/28 14:58
L4	979	CoPtCr or (cobalt near4 platinum near4 chromium) or Co-Pt-Cr or Co--Pt--Cr or (Co near3 Pt near3 Cr) or PtCrCo or PtCoCr or CoCrPt or CrCoPt or CrPtCo	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:21
L5	15	3 and 4	EPO; JPO; DERWENT	OR	OFF	2006/06/28 14:52
L6	2017029	pinned or pinning or fixed or fixing	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:18
L7	780	3 and 6	EPO; JPO; DERWENT	OR	OFF	2006/06/28 14:59
L8	6755419	co or fe or cobalt or iron or CoFe\$4 or FeCo\$4	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:20
L9	355	7 and 8	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:01

## EAST Search History

L10	263847	magnet or magnets or afm or antiferromagnet\$5 or (high or large) near2 coercivit\$5 or self adj pin\$4 or anti adj ferromagnet\$5	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:03
L11	153	9 and 10	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:02
L12	24	(afm or antiferromagnet\$5 or anti adj ferromagnet\$5) and self adj pin\$4	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:14
L13	6	(afm or antiferromagnet\$5 or anti adj ferromagnet\$5 or PtMn) near4 coercivit\$	EPO; JPO; DERWENT	OR	OFF	2006/06/28 15:16
L14	59149	(spin adj bulb or ((read\$3 or reproduc\$3) near2 (element or device\$1)) or mr or DOMR or mre or magneto adj2 (resistiv\$3 or resistance\$1) or magnetoresist\$5 or amr or magnetic\$4 adj2 (resistiv\$3 or resistance\$1) or TuMR\$1 or CMR\$1 or GMR\$1 or spin adj2 valve\$1 or svmr\$1 or tjmr\$1 or tmj\$1 or tmr\$1 or mram\$1 or magnetic adj2 memor\$3 or magnetic adj random adj access adj memor\$3 or DSV or TJM or macro adj magnetoresist\$5 or macromagnetoresist\$5 or piggyback or ((composite or combination or merged) adj4 head\$1)).ti,ab,clm. or "360/113" or 360/313-327.33.ccls. or 338/32\$2.ccls. or 324/207.21.ccls. or 324/252.ccls. or 365/171.ccls. or 365/173.ccls. or 428/811-811.5.ccls. or 148/108.ccls.	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:22
L15	66531	antiparallel or anti adj parallel or ((antiferromagnetic or AFM or anti adj ferromagnetic\$5 or exchange) adj2 coupling\$1) or APC or AAF or SAF or synthetic\$4 adj2 (antiferromagnet\$5 or anti adj ferromagnet\$5 coupling) or AP1 or AP2 or APC1 or APC2 or AFC or ((reference or keeper) near2 layer\$1)	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:22
L16	66531	15 and 15	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:18
L17	6062	14 and 15	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:18
L18	682578	(pinned or pinning or fixed or fixing) and free	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:23
L19	3769	17 and 18	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:19
L20	77570	co near2 fe or cobalt near2 iron or CoFe\$4 or FeCo\$4	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:24

## EAST Search History

L21	2806	19 and 20	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:21
L22	5923	CoPtCr or (cobalt near4 platinum near4 chromium) or Co-Pt-Cr or Co--Pt--Cr or (Co near3 Pt near3 Cr) or PtCrCo or PtCoCr or CoCrPt or CrCoPt or CrPtCo	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:24
L23	59149	(spin adj bulb or ((read\$3 or reproduc\$3) near2 (element or device\$1)) or mr or DOMR or mre or magneto adj2 (resistiv\$3 or resistance\$1) or magnetoresist\$5 or amr or magnetic\$4 adj2 (resistiv\$3 or resistance\$1) or TuMR\$1 or CMR\$1 or GMR\$1 or spin adj2 valve\$1 or svmr\$1 or tjmr\$1 or tmj\$1 or tmr\$1 or mram\$1 or magnetic adj2 memor\$3 or magnetic adj random adj access adj memor\$3 or DSV or TJM or macro adj magnetoresist\$5 or macromagnetoresist\$5 or piggyback or ((composite or combination or merged) adj4 head\$1).ti,ab,clm. or "360/113" or 360/313-327.33.ccls. or 338/32\$2.ccls. or 324/207.21.ccls. or 324/252.ccls. or 365/171.ccls. or 365/173.ccls. or 428/811-811.5.ccls. or 148/108.ccls.	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:22
L24	66531	antiparallel or anti adj parallel or ((antiferromagnetic or AFM or anti adj ferromagnetic\$5 or exchange) adj2 coupling\$1) or APC or AAF or SAF or synthetic\$4 adj2 (antiferromagnet\$5 or anti adj ferromagnet\$5 coupling) or AP1 or AP2 or APC1 or APC2 or AFC or ((reference or keeper) near2 layer\$1)	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:22
L25	66531	antiparallel or anti adj parallel or ((antiferromagnetic or AFM or anti adj ferromagnetic\$5 or exchange) adj2 coupling\$1) or APC or AAF or SAF or synthetic\$4 adj2 (antiferromagnet\$5 or anti adj ferromagnet\$5 coupling) or AP1 or AP2 or APC1 or APC2 or AFC or ((reference or keeper) near2 layer\$1)	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:20
L26	6062	23 and 25	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:23
L27	682578	(pinned or pinning or fixed or fixing) and free	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:24
L28	3769	26 and 27	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:24

## EAST Search History

L29	77570	co near2 fe or cobalt near2 iron or CoFe\$4 or FeCo\$4	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:22
L30	2806	28 and 29	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:24
L31	5923	CoPtCr or (cobalt near4 platinum near4 chromium) or Co-Pt-Cr or Co--Pt--Cr or (Co near3 Pt near3 Cr) or PtCrCo or PtCoCr or CoCrPt or CrCoPt or CrPtCo	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:51
L32	747	30 and 31	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:25
L33	573	@ad<="20040217" and 32	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:24
L34	8	((high near3 coercivity) with PtMn)	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:46
L35	8	((high near3 coercivity) with PtMn)	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:50
L36	60	(CoPtCr or (cobalt near4 platinum near4 chromium) or Co-Pt-Cr or Co--Pt--Cr or (Co near3 Pt near3 Cr) or PtCrCo or PtCoCr or CoCrPt or CrCoPt or CrPtCo) with ((fixing or pinning) near2 (layer\$1 or film\$1))	US-PGPUB; USPAT	OR	OFF	2006/06/28 15:52
L37	33847	SAF or synthetic\$4 adj2 (antiferromagnet\$5 or anti adj ferromagnet\$5) or AP1 or AP2 or APC1 or APC2 or AFC or ((reference or keeper) near2 layer\$1)	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:21
L38	15726	free and 37	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:22
L39	77570	co near2 fe or cobalt near2 iron or CoFe\$4 or FeCo\$4	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:22
L40	1841	38 and 39	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:22
L41	4000	(GMR or giant or spin adj valve) and (tunnel or TUMr or TuMR)	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:23
L42	547	40 and 41	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:23
L43	354	@ad<="20040217" and 42	US-PGPUB; USPAT	OR	OFF	2006/06/28 16:24